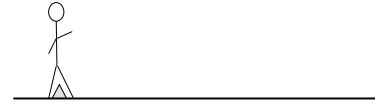


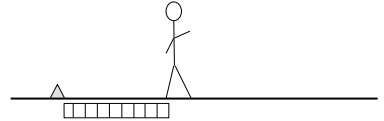
# Motion Lab 3: Distance or Displacement

## PART A

1. Place a cone where you will begin your walk and stand next to it. This marks the origin.

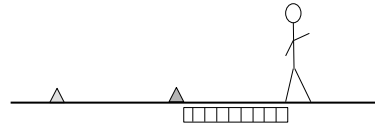


2. Walk 4 steps forward and stop. Using the meter stick, have your partner measure the distance you walked from the origin. Mark this spot with the second cone.



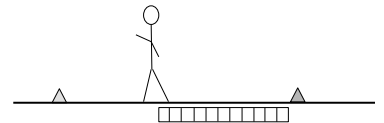
Distance: \_\_\_\_\_

3. Now walk 4 more steps forward. Your partner will measure the distance you walked from the second cone placed, not your origin. Move the cone to your current position.



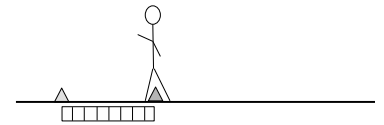
Distance: \_\_\_\_\_

4. Now turn 180° and walk 5 steps while your partner again measures the distance you walked. Move the cone to your current position.



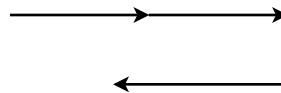
Distance: \_\_\_\_\_

5. Finally, have your partner measure how far you are from the origin. This is your measured displacement ( $\Delta x$ ).



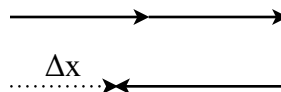
Measured Displacement ( $\Delta x$ ): \_\_\_\_\_

6. Find the distance you walked by adding all measurements together besides measured displacement. Show Work.



Distance (d): \_\_\_\_\_

7. Find the calculated displacement of your motion by adding the *forward* measurements (2 & 3) and subtracting the *backwards* measurement (4). Show Work



Calculated displacement ( $\Delta x$ ): \_\_\_\_\_

Describe the difference between the distance you walked and the displacement of your motion? Answer using complete sentences.

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Name: \_\_\_\_\_

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### PART B

1. Start at your cone again, and walk 2 steps forward and measure how far you walked.

Write it here: \_\_\_\_\_

2. Turn 90° left, walk 3 steps and measure how far you walked.

Write it here: \_\_\_\_\_

3. Turn 90° left, walk 2 steps and measure how far you walked.

Write it here: \_\_\_\_\_

4. Turn 90° left, walk 5 steps and measure how far you walked.

Write it here: \_\_\_\_\_

5. Have your partner measure how far you are from the origin.

Write it here: \_\_\_\_\_. Is this your displacement or distance? Circle your choice.

6. Now figure out your distance and write it below. Show your work and draw a picture of the motion.

Distance (d): \_\_\_\_\_

Describe why your displacement is so much less than your distance walked. Answer using complete sentences.

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### PART C

1. Find your cone again, walk 3 steps forward, and measure how far you walked.

Write it here: \_\_\_\_\_

2. Turn 90° right, walk 4 steps, and measure how far you walked.

Write it here: \_\_\_\_\_

3. Have your partner measure your displacement.

Displacement ( $\Delta x$ ): \_\_\_\_\_

4. Now figure out your distance and write it below. Show work and draw a picture of the motion.

Distance (d): \_\_\_\_\_

## PHYSICAL SCIENCE

DSHS

Name: \_\_\_\_\_

Mrs. Ellis

5. Draw a picture of what your path looked like in part C. Show all your measured distances on the diagram.

Indicate your displacement ( $\Delta x$ ) with an arrow.

6. What mathematical way we can solve for your displacement without measuring it? Calculate your displacement. Show your work.

## WHAT YOU LEARNED

1. Describe the difference between distance and displacement.

2. What value is bigger, distance or displacement?

3. Describe a scenario when your distance and displacement would be the same value.

4. Draw a mirror image of that produced in PART C #6 (flip it over its y-axis). Does the displacement or distance change in this circumstance?